

REMARKS

This application has been reviewed in light of the Office Action dated June 9, 2003. Claims 23-29 are pending in this application. Claims 20-22 have been cancelled, without prejudice or disclaimer of the subject matter, and these claims will not be mentioned further. Claims 23-29 have been amended to define still more clearly what Applicants regard as their invention, in terms that distinguish over the art of record. Favorable reconsideration is requested.

The Office Action rejected Claims 28 and 29 under 35 U.S.C. § 112, first paragraph, as non-enabling, asserting that “the specification, while being enabling for providing the outputs to a signal processing circuit to perform edge enhancement, does not reasonably provide enablement for providing the inputs to the signal processing circuit in parallel on a block basis.” Applicants respectfully traverse this rejection. Initially, Applicants submit that Claim 28 has been amended to recite:

Claim 28. An image pickup element formed on a single semiconductor chip, comprising:
a pixel area including an arrangement of a plurality of blocks, each block including at least two photo-detection elements;
a plurality of output lines which output, in parallel, signals ~~from said at least two of the~~ photo-detection elements of included in the block; and
an operation section which inputs, in parallel, signals originating from the signals outputted in parallel from said plurality of output lines, wherein said operation section performs ~~[[an]]~~ edge-emphasis processing.

Applicants note that the signal processing circuit receives as an input, block signals from the interpolation circuit (see, e.g., Figure 4, reference numeral 103), which are modified versions of the block signals outputted from the image pickup element (see, e.g., Figure 4, reference numeral 101). In addition, Applicants submit that the specification at least from page 10, line 20, to page 11, line 4, enables one of ordinary skill in the art to practice the

feature of providing the inputs to the signal processing circuit in parallel on a block basis. This section describes, in conjunction with Figure 4, that the interpolation circuit (see, e.g., Figure 4, reference numeral 103) outputs signals in the form of basic blocks, and that these basic blocks are read into the signal processing circuit (see, e.g., Figure 4, reference numeral 104). Applicants believe that the Section 112, first paragraph, rejection has been obviated, and its withdrawal is therefore respectfully requested.

The Office Action rejected Claims 23, and 25 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,322,752 (Bixby) and under 35 U.S.C. § 102(a) as being anticipated by WO 98/19270 A2 (Seeger et al.); Claims 24 and 26 under 35 U.S.C. § 103(a) as being obvious from Bixby in view of U.S. Patent No. 5,196,939 (Elabd et al.); Claim 27 under 35 U.S.C. § 103(a) as being obvious from Bixby in view of U.S. Patent No. 6,014,467 (Asano); Claim 28 under 35 U.S.C. § 103(a) as being obvious from Bixby in view of U.S. Patent No. 4,816,910 (Hashimoto et al.); and Claim 29 under 35 U.S.C. § 103(a) as being obvious from Bixby in view of Hashimoto et al. and U.S. Patent No. 5,771,031 (Kinoshita et al.). Applicants respectfully traverse these rejections.

Applicants submit that amended independent Claims 23, 25, and 28, together with the remaining, dependent claims, are patentably distinct from the cited prior art at least for the following reasons.

The aspect of the present invention set forth in Claim 23 is an image pickup element formed on a single semiconductor chip. The image pickup element comprises a pixel area, plurality of output lines, and operation section. The pixel area includes an arrangement of a plurality of blocks, each block including at least two photo-detection elements. The plurality of output lines output, in parallel, signals of the photo-detection elements included in the block. The operation section inputs, in parallel, the signals outputted in parallel from the plurality of output lines and performs interpolation

processing to interpolate a predetermined signal using signals other than the predetermined signal.

One important feature of Claim 23 is that the image pickup element outputs, in parallel, signals of photo-detection elements included in each of the blocks of the photo-detection elements, arranged in a pixel area. In other words, the image pickup element reads out in parallel signals of all the photo-detection elements of each block. Support in the specification for this feature can be found at least from page 14, line 11, to page 17, line 17, with reference to Figures 11 and 12. (It is to be understood, of course, that the scope of Claim 23 is not limited to the details of this embodiment.)

Bixby, as understood by Applicants, relates to a fast frame rate sensor readout. The Office Action at page 5 states that Bixby discloses "a plurality of output lines which output, in parallel, signals from said at least two photo-detection elements of the block", and that element 45 of Figure 4 provides support for this assertion. Applicants submit that Figure 4 shows a plurality of blocks 1-6, each of which includes a predetermined number of horizontal lines of pixels. In order to read out signals from each block, all the horizontal lines of the block are selected by a block select shift register 42 and all of the vertical lines of the block are selected sequentially by a column shift register 44 to output in parallel signals of the selected vertical line. Applicants have not found anything, however, in Bixby that would teach or suggest outputting, in parallel, signals of all the pixels in each pixel block, as recited in Claim 23.

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Accordingly, Applicants submit that at least for this reason, Claim 23 is patentable over Bixby.

Applicants submit that Seger et al. was published on May 7, 1998, which is later than the December 26, 1997 filing date of Japanese Application 9-361096, from which this case claims priority. Applicants are preparing a sworn translation of Japanese Application 9-361096 and will submit it shortly to the Office removing Seger et al. as a prior art reference.

Independent Claims 25 and 28 include the same feature of outputting, in parallel, signals of photo-detection elements included in each of the blocks of the photo-detection elements, arranged in a pixel area, as discussed above in connection with Claim 23. Accordingly, Claims 25 and 28 are believed to be patentable for at least the same reasons as discussed above in connection with Claim 23.

A review of the other art of record, including Elabd, Asano, Hashimoto et al., and Kinoshita et al., has failed to reveal anything that, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as applied against the independent claims herein. Therefore, those claims are respectfully submitted to be patentable over the art of record.

The other claims in this application depend from one or another of the independent claims discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

This Amendment After Final Action is believed clearly to place this application in condition for allowance and, therefore, its entry is believed proper under 37 C.F.R. § 1.116. Accordingly, entry of this Amendment After Final Action, as an earnest effort to advance prosecution and reduce the number of issues, is respectfully requested. Should the Examiner believe that issues remain outstanding, it is respectfully requested

that the Examiner contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,


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